REMARKS

Claims 1-20 are now currently pending in the present application. Claims 1-3 and 10-14 are currently amended.

The Examiner objected to claim 1 because the claim is drawn to unelected product SEQ ID NO:3. Applicant has amended claim 1 to delete reference to SEQ NO:3. Favorable Action is therefore solicited.

The Examiner rejected claims 10-14 under 35 USC §101 arguing that the claimed invention is directed to non-statutory subject matter. Applicant has amended claims 10-14 to recite "non-human". Favorable Action is therefore solicited.

The Examiner rejected claims 1, 2-4, 8-9 and 10-14 under 35 USC §112, second paragraph, as being indefinite. The Examiner argued that the phrase "encodes a polypeptide and composed of a combination" in claim 1 is unclear. Applicant's have deleted the "polypeptide" and replaced the term with "fusion protein" for clarification. Support for this amendment can be found on page 10, lines 22-28. Favorable Action is therefore solicited.

The Examiner also argued that "biosynthetic nucleic acid sequence" is unclear. Applicant has therefore deleted the term "biosynthetic" according to the Examiner's suggestion.

The Examiner also rejected the phrase "a sequence of the following protein groups is used" because Examiner believed that it was not clear if the phrase "sequences" is referring to a sequential order of the recited genes in the polynucleotides or if the phrase "sequence" is referring to a nucleic acid "sequence" or the amino acid sequence of the protein. The Examiner further argued that it is not clear how the nucleic acid sequce of claim 1 can be linked to an amino acid sequence of claim 2.

However, under §112, the language of the claim must be such that a person of ordinary skill in the art can interpret the metes and bounds of the claim so as to understand how to avoid infringement.[2] Furthermore, the purpose of claims is not to explain the technology or how it

[2] See Morton Int'l, Inc. v. Cardinal Chem. Co., 5 F.3d 1464, 1470, 28 USPQ2d 1190, 1195 (Fed. Cir. 1993); MPEP §2173.02; MPEP §2171.

works, but to state the legal boundaries of the patent grant.[3] One of ordinary skill however would easily be able to determine the metes and bounds of the claim from reading the claims in view of the specification, especially page 10, lines 5-20. In claims 2-3, the sequences are nucleic acid sequences which code for the listed protein group. This nucleic acid sequence can also be determined from the amino acid sequence of the protein group, for example, by backtranslating as discussed on page 9, lines 37 to page 10 line 4. Further, as stated on page 9, lines 11-13, the nucleic acid sequences of the invention can be prepared synthetically or obtained naturally. Therefore, one of ordinary skill in the art would be able to determine the metes and bounds of the claimed invention.

The Examiner also rejected claim 4 as being indefinite for including a reference to (c) in claim 1. However, in the reply of May 9, 2005, claim 1 recited numbers 1-4 out of clerical error. Clauses are instead labeled a)-d) in claim 1. This labeling was used as originally filed and was not amended. Favorable action is therefore solicited.

The Examiner also rejected claims 1-4, 6 and 8-14 under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner argued that amino acid sequences that are 60% identical to SEQ ID NO:1 may have unknown activity or is widely divergent.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.[4] The Examiner also stated that "one of ordinary skill in the art would be able to arrive at a polynucleotide having 80% sequence identity to SEQ ID NO:1." The applicant has amended the claim to recite "80% homology". The amended claim, along with the disclosure on page 7 of the current application that there are computer programs available with accepted algorithms to arrive at the claimed sequences, is such that one of ordinary skill in the art would conclude that the inventor had possession of the invention as claimed.

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[3] See S3 Inc. v. nVidia Corp., 259 F.3d 1364, 59 USPQ.2d 1745 (Fed. Cir. 2001); MPEP §2173.05

[4] MPEP §2163.I

In light of the foregoing remarks, the Applicant respectfully requests that the §112 rejections be withdrawn.

The Examiner has rejected claims 1-4, 6, 8-9 and 10-14 under 35 USC §103(a) as being unpatentable over **Hohne et al.** (Eur. J. Biochem. 241, 1996), **Ohlrogge et al.** (Oils-Fats-Lipids 1995) and **Yamamoto et al.** (US 5,506,120).

The Examiner argues that

1) **Hohne et al.** teaches that the N-terminal region of the LBLOX may represent a targeting sequence and may be responsible for the attachment of LBLOX to the lipid body surface and that LBLOX contains a recognition site for lipid bodies.
2) **Ohlrogge et al.** teaches a polynucleotde encoding a Δ-4 desaturase.
3) **Yamamoto et al.** teaches a polynucletide encoding a fusion protein.

and that it would be obvious to identify the targeting sequences that identify target LBOX to lipid bodies, and make a fusion protein as taught by **Yamamoto et al.** made up of LBLOX disclosed in **Hohne et al.** and the desaturase of **Ohlrogge et al.**

According to §103, in order to establish a prima facie case of obviousness, there must be (1) some suggestion or motivation to modify the references, (2) reasonable expectation of success and (3) the prior art reference must teach or suggest all of the claim limitations.[5] In the current case, the Examiner has not established a prima facie case of obviousness because there is no motivation to combine the references and furthermore not all the claim limitations are taught or suggested.

Regarding the **Hohne et al.** reference, the Examiner's interpretation is in error. **Hohne et al.** is directed toward the biochemical characterization of a lipid body lipoxygenase from cucumber. This can be seen from the disclosure of the first page, second column, second paragraph stating "we first analyzed the properties of fragments from the lipid body lipoxygenase." The results of this analysis are stated "Lipoxygenase is present in plant cells as many isoforms expressed differently during plant development and located in different tissues

[5] See MPEP §2143

and compartments."[6] In light of this, one skilled in the art, upon reading the discussion section, would not be able to determine the targeting sequence. As it states "the part of the molecule that may represent a targeting sequence and the domain of this lipoxygenase form that may be responsible for its attachment to the lipid body surface remain to be determined from the primary structure".[7] The latter part of the sentence should be especially noted wherein it is explicitly disclosed that the targeting sequence *remains* to be determined from the primary structure. From this disclosure, there is no clear teaching that the part is in fact a targeting sequence or what that targeting sequence is. Furthermore, there is no teaching or suggestion that LBLOX should be fused with another lipid protein, and made to target lipid bodies.

It appears that the Examiner is applying an 'obvious to try' standard combined with impermissible hindsight reconstruction using applicant's disclosure as a blueprint.[8] It is impermissible to apply such a standard, as stated in the MPEP, "what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." Here, the prior art does not even give general guidance as to form, because it does not suggest combining sequences of LBLOX with a fatty acid or lipid sequence. Furthermore, no teaching is made of what the target sequence is. All that is suggested is that what remains unknown is whether the part of the molecule, referenced in the discussion of the article, represents a targeting sequence.

Furthermore, although **Ohlrogge et al.** discloses a polynucleotide encoding a Δ-4 desaturase, nothing is disclosed about combining the desaturase with LBLOX for targeting proteins.

Additionally, **Yamamoto et al.** is related to a method of producing peptides or proteins which make it possible to cause wide range of host mircroorgansims to produce heterologous fusion proteins and then excise desired gene products efficiently from the fusion proteins using a highly specific enzyme. **Yamamoto et al.** is silent about a method for the targeting of proteins

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[6] **Hohne et al.** page 2, 2nd column, under Results, first paragraph
[7] **Hohne et al.** page 5, 2nd column, 2nd full paragraph
[8] MPEP §2145.X.B

as claimed in the present invention. There is no suggestion for use of the fusion process for combining LBLOX and desaturase to target toward lipid bodies.

Even assuming, arguendo, that the references can be combined, as stated in the MPEP, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.[9] Therefore, applicant respectfully submits that there is no motivation to combine the references and furthermore, not all the limitations of the current claims are disclosed.

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Respectfully submitted,
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[9] MPEP §2143.01.III